CLAIMS

What is claimed is:

Claim 1. - Apparatus [10] to facilitate surface treatment of articles of manufacture [12] of the type having a given handling surface [14], said apparatus comprising:

a releasable gripping structure [16] for supporting, in a stable position, an article of manufacture [12] of the type having a given handling surface [14];

a source [18] of elongate stem elements [20], said source being positioned to align a given one of said elongate stem elements [20] with the elongate axis [22] thereof in a predetermined orientation relative to said given handling surface of said plastic article;

an advancing mechanism [24] for advancing a free end [34] of said given elongate element [20] into contact with said given handling surface [14] of said plastic article [12]; and

a securing mechanism [26] for fixedly attaching said free end [34] of said given elongate stem element [20] to said given handling surface [14] of said plastic article [12], such that said stem element thereafter

fixedly extends from said handling surface to serve as a handle for manipulating and supporting said article.

Claim 2. - Apparatus in accordance with Claim 1 wherein:

said source of elongate stem elements [18] comprises a reel [36] of coilable plastic rod material [38] defining a substantially continuous supply of elongate stem elements [20], said rod material having a captive end retained in association with said reel and a free end [40] defining said one end [34] of said given one of said stem elements [20].

Claim 3. - Apparatus in accordance with Claim 1 wherein:

said source of elongate stem elements [18] comprises a plastic extrusion processor for extruding a plastic stem of predetermined dimensions.

Claim 4. - Apparatus in accordance with Claim 3 wherein:

said advancing mechanism comprises an assembly for axially receiving said extruded stem element from said extrusion processor and axially advancing said stem element into contact with said article of manufacture.

Claim 5. - Apparatus in accordance with Claim 1 wherein:

said source of elongate stem elements [18] comprises a hopper-feed assembly capable of being loaded with a plurality of said stem elements

for axially advancing one such element at a time into a predetermined position.

Claim 6. - Apparatus in accordance with Claim 1 wherein:

both said article of manufacture and said stem element are formed of plastic, and

said securing mechanism comprises an ultrasonic welding assembly.

Claim 7. - Apparatus in accordance with Claim 1 wherein:

both said article of manufacture and said stem element are formed of plastic, and

said securing mechanism comprises a chemical bonding assembly.

Claim 8. - Apparatus in accordance with Claim 1 wherein:

both said article of manufacture and said stem element are formed of thermoplastic material, and

said securing mechanism comprises a heating element to form a thermoplastic bond.

Claim 9. - Apparatus in accordance with Claim 1 wherein:

said stem element is formed of metal having deformable barbs thereon, and

said securing mechanism comprises a force-fitting assembly for deforming said barbs within said article.

Claim 10. - A method for facilitating manipulation of articles of manufacture during surface treatment processing, said method comprising the steps of:

[100] firmly gripping said article of manufacture in a given position;

[200] aligning an elongate processing stem in physical contact with said article of manufacture at a given point of contact; and

[300] physically attaching said processing stem to said article of manufacture at said given point of contact, such that said processing stem can be used as a handle for manipulating and supporting said substrate article.

Claim 11. - The method of claim 10, wherein:

said processing stem is formed of plastic material; and

said attaching step comprises thermal bonding of said stem to said article of manufacture at said given point of contact.

Claim 12. - The method of claim 11, wherein:

both said article of manufacture and said processing stem are formed of plastic material.

Claim 13. - The method of claim 10, wherein:

one end of said stem is bent at an angle relative to the other end therof to achieve a desired orientation of said stem relative to said article.

Claim 14. - The method of claim 10, wherein:

said processing stem is formed of suitably deformable metal; and

said attaching step comprises axially pressing a portion of said stem into the body of said substrate article and deforming said stem within said substrate article to form a mechanical bond between said body of said article and said portion of said stem.